N° 16,562 A.D. 1902

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COMPLETE SPECIFICATION.

Improvements in or relating to Dental Instruments.

I, Claude Ransome Basford, of Healdsburg, Sonoma County, State of California, U.S.A. Dentist, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

The present invention relates to a certain new and useful dental obtunder for use in connection with the work of an electrically operated, or a foot operated dental drill; the object of the invention being to enable the operator of the dental engine to eject an atomized anesthetic or obtundent into the cavity of the tooth being operated on in order to render the nerves of the tooth insensible to pain during the drilling operation, thereby enabling the operator to continue the work of drilling or excavating without interruption.

To comprehend the invention reference should be had to the accompanying sheet of drawings, wherein—

Figure 1 is a side view of an ordinary foot power dental drill or engine with the improved obtunding mechanism attached thereto;

Figure 2 is an enlarged longitudinal sectional view of the atomizer tube for the anesthetic;

Figure 3 is a broken sectional detail view of the atomizer tube, illustrating the valve for controlling the supply of anesthetic to the mixing chamber; and

Figure 4 is an enlarged detail view of a modification of the atomizer tip.

The numeral 1 is used to indicate the stand of an ordinary dental engine, and 2 the handle connected to jointed section 3 by the flexible tube 4. Through the section 3, flexible tube 4 and handle 2 works the drill rod 5, which, at its outer end, carries the drill burr 6^1. These features being of the usual construction call for no specific description herein.

To the handle 2 of the dental drill is attached, by clamp 6, an atomizer tube 7. This tube has formed therein a central opening 8 and air passage-ways 9, through which is fed to the mixing chamber of the atomizer the obtundent or anesthetic. The atomizer tube 7 slips onto coupling 10, being clamped thereon by means of the screw collar 11. The coupling is provided with a feed pipe 12, and an air inlet pipe 13. When the tube 7 is clamped onto the coupling, the feed pipe 12 will register with the central passage-way 8, and the air passage-ways 14 will register with the passage-ways 9 of the atomizer tube.

The atomizer nozzle 14^1, carrying the tip 15, is attached to section 16 by a securing nut 17, section 16 in turn being screwed into screw-threaded end of tube 7. Section 16 forms a mixing chamber 18, into which the obtunder or anesthetic and air from passage ways 8 and 9 discharge and intermix.

To pipe 12 is connected one end of a flexible tube 19, the opposite end of which connects with a reservoir 20. This reservoir contains the obtundent or anesthetic to be used for deadening the nerves of the teeth being treated. The outlet of fluid from the reservoir is controlled by means of the valve 21. A flexible air tube 22 is attached at one end to pipe 13, its opposite end being secured to a coupling 23. This coupling unites the air tube to the air supply pipe 24, which pipe leads from a pressure tank 25. To control the flow of air from the tank 25 to the air tube 22, a valve 25^1 is interposed in the supply pipe 24.

Any suitable means may be employed for compressing the air within the

tank 25; a simple device for this purpose being an air pump 26 connected therewith.

From the coupling 23 extends a branch pipe 27, which connects with reservoir 20. By this means air under pressure is admitted to the said reservoir 20, the purpose of which is to force the obtundent or anesthetic from the reservoir into the atomizer tube 7. The admission of air into the reservoir is controlled by the valve 28 secured within the branch pipe 27.

The reservoir 20 is secured by clamp 29, or otherwise to the jointed section 3 of the dental tool.

In addition to the controlling valve 25^1, a valve 30 is used to regulate the flow of air through coupling 23 to the flexible air tube 22.

For convenience of the operator a valve 31 is secured within the tube 7, which valve controls the flow of material from the reservoir through central passage-way 8. This valve is operated by the finger piece 32, which is within convenient reach of the operator. By means of this valve the operator may cut off or regulate the flow of the anesthetic to the mixing chamber 18 at any desired moment.

The tip of the atomizer nozzle 14^1 is so arranged as to discharge onto the tooth immediately in advance of or at the cutting point of the drill burr 6^1. The term drill burr will be understood as including a grinding disk, such as is employed for grinding the surface of the tooth for crown work, or any other purpose.

At times it is required that the anesthetic or obtundent be atomized onto the tooth at different points. For this purpose the form of nozzle illustrated in Figure 4 of the drawings is employed, wherein the nozzle 14^1 is provided with branch tips 15^1.

By detachably connecting the atomizer tube 7 to coupling 10, I am enabled to use tubes corresponding to the various shapes of drill handles employed in connection with dental work.

The anesthetic or obtundent to be utilized in anesthetizing the tooth is inserted into the reservoir 20 through filling orifice 33, which is closed by cap 34.

In operation the various valves are opened to admit of air from the pressure tank into the reservoir 20 and air tube 22. The pressure of air within the reservoir 20 forces the anesthetic or obtundent therefrom into tube 19, which delivers same to the central passage-way 8, while the air is delivered into the passage-ways 9. From these passage-ways the anesthetic and air is discharged into the mixing chamber 18, wherein the air and anesthetic intermix. From this chamber the aerated obtundent is sprayed onto the tooth in advance of the drill burr in an atomized form, which, being ejected under pressure, penetrates the tissues of the tooth and deadens or blunts the nerves thereof so as to render the work of excavating or drilling of the tooth painless.

By permitting the anesthetic to be ejected onto the tooth while the dental tool is being operated, it is not required that the work of the operator cease or be interrupted by reason of any pain to the patient.

Practical operation has demonstrated that the most sensitive tooth may be treated by the described obtunder attachment with absolute freedom from pain.

I am aware that changes may be made in the arrangement of parts and details of construction herein shown and described without creating a departure from the invention.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is

1st. The combination with the hand piece of a dental tool, of an obtunder tube detachably attached thereto, air passage and an anesthetic passage in said tube, a nozzle arranged to discharge an atomized anesthetic or obtundent onto a tooth in advance of the drill of the dental tool, a mixing chamber interposed between

the nozzle and the tube, and means for supplying air and an anesthetic into the mixing chamber under pressure.

2nd. The combination with the dental tool, of means for obtunding the tooth operated on, the same comprising a tube attached to the hand piece of the tool, a discharge nozzle attached to the tube and directed toward the point operated upon, a mixing chamber interposed between the nozzle and tube, and means for supplying air and an anesthetic to the mixing chamber and forcing the same therefrom through the nozzle in an atomized form onto the tooth operated upon with sufficient pressure to penetrate the tissues of the tooth.

3rd. The combination with a dental tool, of means for obtunding the tooth operated on, the same comprising a tube attached to the hand piece of the dental tool having a nozzle directed toward the point operated upon, said tube having air and fluid passage-ways therein, an air pressure means, a reservoir for supplying an anesthetic or obtundent under pressure, connection between said pressure tank and the tube and between the reservoir and said tube, and means whereby the supply of air and anesthetic to the nozzle is under the control of the operator.

4th. In a dental obtunder, the combination with the hand piece of a dental tool, of a tube connected thereto having a nozzle directed to the point operated upon by the burr of the dental tool, a coupling to which the tube is detachably connected, means for supplying air and an anesthetic under pressure through the coupling and into the tube, from whence the same discharges into a mixing chamber interposed between the nozzle and the tube, and means for controlling the flow of the air and anesthetic into the mixing chamber.

Dated this 29th day of May, 1902.

CLAUDE RANSOME BASFORD.
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Agents for the Applicant.

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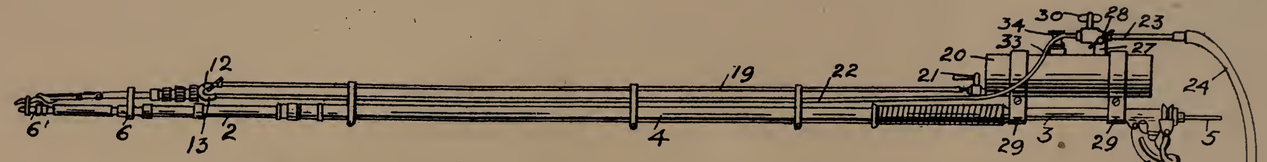


FIG. 1

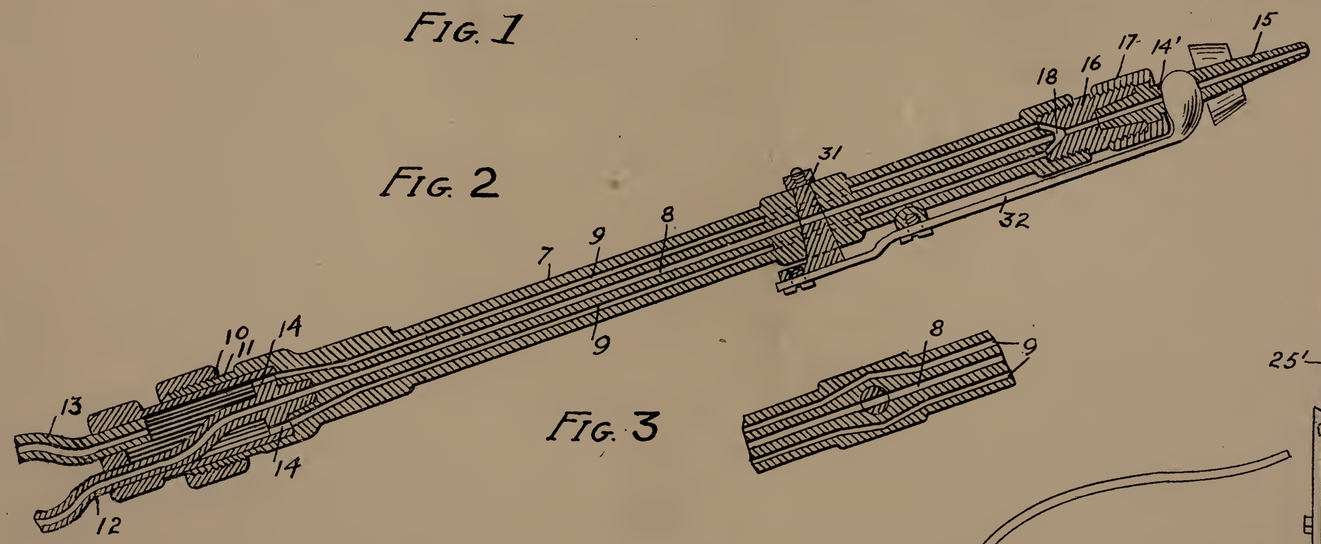
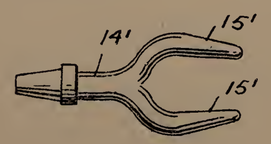
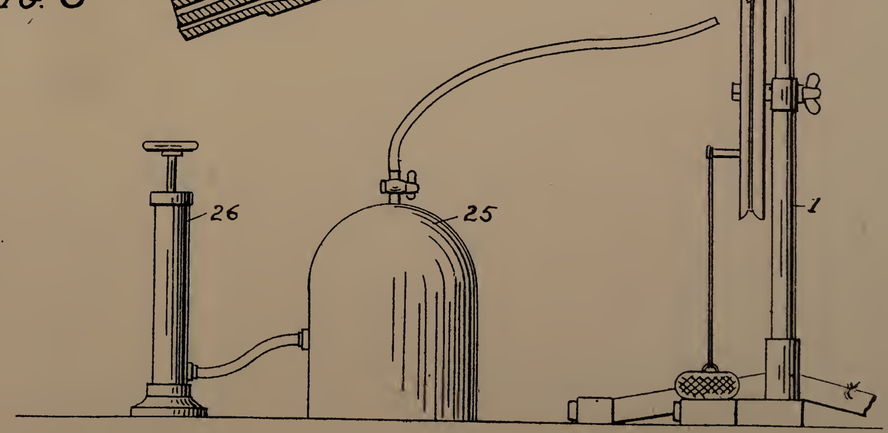


FIG. 2

FIG. 3

FIG. 4





[This Drawing is a full-size reproduction of the Original.]

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